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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	: **10/729,925**	Confirmation No. 2420
Applicant	: A. SHIMADA et al.	
Filed	: December 9, 2003	
Title	: APPARATUS AND METHOD FOR PARTITIONING AND MANAGING SUBSYSTEM LOGICS	
TC/AU	: 2171	
Examiner	: TBD	
Docket No.	: 500.43322X00	
Customer No.:	24956	

PETITION TO MAKE SPECIAL
UNDER 37 CFR §1.102(d) (MPEP §708.02(VIII))

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The Applicants petition the Commissioner to make the above-identified application special in accordance with 37 CFR §1.102(d). In support of this Petition, pursuant to MPEP § 708.02(VIII), Applicants state the following.

(A) REQUIRED FEE

This Petition is accompanied by the fee set forth in 37 CFR § 1.117(h). A Credit Card Payment Form in the amount of $130 accompanies this Petition in satisfaction of the fee. The Commissioner is hereby authorized to charge any

additional payment due, or to credit any overpayment, to Deposit Account No. 50-1417.

(B) ALL CLAIMS ARE DIRECTED TO A SINGLE INVENTION

Following the Second Preliminary Amendment filed on April 18, 2005, claims 10-25 are pending in the application. All the pending claims of the application are directed to a single invention. If the Office determines that all claims in the application are not directed to a single invention, Applicant will make election without traverse as a prerequisite to the grant of special status.

The claimed invention, as set forth in independent claims 10, and 19-25, is generally directed to partitioning and managing logics in a storage system. Under independent claim 10, the invention is a disk array system, comprising: a port receiving data from an information processing device; a first controller controlling transfer of data received by said port; a memory storing data in accordance with the controlling performed by said first controller; a second controller controlling transfer of data stored in said memory; a plurality of disk drive groups to which data transferred by said second controller is stored and having a plurality of storage regions in a plurality of disk drives; a plurality of logical units being addresses to which data is sent from said information processing device and corresponding to said storage regions; a plurality of resource groups each having a first plurality of resources among a plurality of said ports, said first controller, said memory, said second controller, said disk drive groups, or said logical units; and a first resource in

a first resource group of said resource groups, said first resource being changed from a first state of relating to a second resource in said first resource group into a second state of relating to a third resource in said first resource group for changing configuration in said first resource group.

Furthermore, as set forth in independent claim 19, the invention is a disk array system, comprising: a port receiving data from an information processing device; a logical unit provided for said information processing device and relating to a storage region; a RAID (Redundant Array of Independent Disks) group relating to a plurality of disk drives, said disk drives storing a plurality of data and a parity data related to data sent from said information processing device and relating to said storage region; a plurality of logical resources having said port, said logical unit and said RAID group; a plurality of physical resources having said disk drives; a plurality of resource groups each having one or more said logical resources and one or more said physical resources; and a first resource in a first resource group of said resource groups, said first resource being changed from a first state of relating between said first resource and a second resource in said first resource group into a second state of relating between said first resource and a third resource in said first resource group for changing configuration in said first resource group.

Additionally, as set forth in independent claim 20, the invention is a disk array system, comprising: a port receiving data from an information processing device; a plurality of logical units provided for said information processing device and relating to a plurality of storage regions; a plurality of disk drives having said storage regions;

a plurality of ECC (Error Check and Correct) groups relating to said disk drives and each of said ECC groups storing a plurality of data and a parity data related to data sent from said information processing device; a first plurality of resources having a plurality of said ports, said logical units, said disk drives and said ECC groups; a second plurality of resources having a plurality of types of resources in said first plurality of resources; and a plurality of resource groups each having said second plurality of resources; wherein each of said resource groups, independently of each other, can change a relationship between said second plurality of resources in each of said resource groups.

Also, as set forth in independent claim 21, the invention is a disk array system, comprising: a port receiving data sent from an information processing device; a logical unit provided for said information processing device to store data and relating to a storage region; a plurality of disk drives having said storage region; a RAID (Redundant Array of Independent Disks) group relating to said disk drives, said disk drives storing a plurality of data and a parity data related to data sent from said information processing device; and a plurality of resource groups each having a plurality of resources among said port, said logical unit, said disk drives and said RAID group and each of said resource groups being logically partitioned by logical partition; wherein each of said resource groups, independently each other, can change a relationship between said plurality of resources in said each of said resource groups.

In addition, as set forth in independent claim 22, the invention is a disk array system, comprising: a port receiving data sent from an information processing device; a first controller controlling to transfer data received by said port; a memory storing data in accordance with controlling by said first controller; a second controller controlling to transfer data stored in said memory; a disk drive group storing data transferred by said second controller and having a plurality of disk drives; a logical unit being an address sent data from said information processing device and corresponding to a storage region in said disk drive group; a plurality of resource groups each having said port, a part or all of said first controller, a part or all of said memory, a part or all of said second controller, said disk drive group, and said logical unit; and a first resource in a first resource group of said resource groups, said first resource being changed from a first state of relating to a second resource in said first resource group into a second state of relating to a third resource in said first resource group for changing configuration in said first resource group.

Further, as set forth in independent claim 23, the invention is a disk array system, comprising: a port receiving data sent from an information processing device; a logical unit provided for said information processing device and relating to said port; a RAID (Redundant Array of Independent Disks) group relating to a plurality of disk drives, said disk drives storing a plurality of data and a parity data related to data sent from said information processing device to said port; a plurality of logical resources having said port, said logical unit and said RAID group; a plurality of physical resources having said disk drives; a plurality of resource groups each

having one or more of said logical resources and one or more of said physical resources; a first resource group of said resource groups receiving a request of changing configuration in said first resource group so that a first resource in said first resource group can be changed from a first state of relating between said first resource and a second resource in said first resource group into a second state of relating between said first resource and a third resource in said first resource group.

Additionally, as set forth in independent claim 24, the invention is a disk array system, comprising: a port receiving data from an information processing device; a controller controlling to transfer data received by said port; a memory storing information which is used to control; a plurality of disk drives storing data transferred and having a plurality of storage regions; and a plurality of resource groups each being mutually partitioned by a logical partition and each having a plurality of said ports, a part of logical parts corresponding to said controller, a part of logical parts corresponding to said memory, and said disk drives; wherein each of said resource groups can be related to said information processing device, wherein a first information processing device related to a first resource group of said resource groups cannot access resources in a second resource group of said resource groups.

Finally, as set forth in independent claim 25, the invention is a disk array system, comprising: a port receiving data from an information processing device; a controller controlling to transfer data received by said port; a memory storing data received by said port; a plurality of disk drives storing data transferred and having a

plurality of storage regions; and a plurality of resource groups each being mutually partitioned by a logical partition and each having a plurality of said ports, a part of logical parts corresponding to said controller, a part of logical parts corresponding to said memory, and said disk drives; wherein each of said resource groups can be related to said information processing device, wherein a first information processing device related to a first resource group of said resource groups cannot access resources in a second resource group of said resource groups.

(C) PRE-EXAMINATION SEARCH

A careful and thorough pre-examination search has been conducted, directed to the invention as claimed. The pre-examination search was conducted in the following **US Manual of Classification** areas:

Class	Subclass
711	111,112,114,153, 154,163,170,173
713	200

Furthermore, a keyword search was conducted on the USPTO's EAST database, including the US Published Patent Applications database, and the European and Japanese Abstract databases. Additionally, a search for foreign art was conducted using the European Patent Office's ESPACENET database.

(D) DOCUMENTS DEVELOPED BY THE PRE-EXAMINATION SEARCH AND OTHER ART OF RECORD IN THE CASE

The documents located by the pre-examination search are listed immediately below. These documents were made of record in the present application by the Information Disclosure Statement filed March 7, 2005.

Document No.	Inventor
US 5,657,470	Fisherman et al.
US 6,275,824	O'Flaherty et al.
US 6,275,825	Kobayashi et al.
US 6,502,193	Barber
US 6,615,324	Fernald
US 20020099837	Oe et al.
US 20030023868	Parent

Additionally, the following documents were made of record in the present application by the Information Disclosure Statement filed April 18, 2005.

Document No.	Inventor
US 5568629	Gentry, Timothy W.
US 5829053	Smith, David Lee et al.
US 6275898	DeKoning
US 6289398	Stallmo et al.
US 6425049	Yamamoto et al.
US 6507905	Hubacher et al.
US 6519679	Devireddy et al.
US 6665786	McMichael et al.
US 6728836	Lambright et al.
US 6772287	Uchiyama et al.
US 6851022	Ikeuchi et al.
US 20020016812	Uchishiba, Michihro et al.
US 20020107810	Nishio et al.
US 20020124040	Foster, Robert K. et al.
US 20030014600	Ito et al.
US 20030055933	Ishizaki, Takeshi et al.
US 20030084241	Lubbers, Clark E. et al.
US 20030097393	Kawamoto et al.
US 20030115434	Mahalingam, Mallik et al.
US 20030182501	George, Elizabeth et al.

Document No.	Inventor
US 20040010563	Forte et al.
US 20040049564	Ng, Chan et al.
US 20040111596	Rawson, III, Freeman
US 20050010722	Chen, Chih-Wei
US 20050015546	Zohar, Ofir et al.
JP 5128002	Takahashi et al.

Publication

Freedom Storage Lightning 9900 User and Reference Guide, Hitachi Data Systems Corp., 2002.

Additionally, the following documents were made of record in the present application by the Information Disclosure Statement filed February 3, 2005.

Document No.	Inventor
US 20010047482	Harris et al.

Publication

Buck, A.L. et al., *The Storage Server as Virtual Volume Manager*, **IEEE Comput. Soc.**, April 1993, USA 26-29, pp. 79-86.

Gelb, J.P., *System-Managed Storage*, **IBM Systems Journal**, Vol. 28, No. 1, Jan. 1989, pp. 77-103.

Kaczmarski, M. et al., *Beyond Backup Toward Storage Management*, **IBM Systems Journal**, Vol. 42, No. 2, 2003, pp. 322-337.

Additionally, the following documents were made of record in the present application by the Information Disclosure Statement filed September 22, 2004.

Document No.	Inventor
US 6502162	Blumenau et al.
US 6715031	Camble et al.
US 20020095602	Pherson et al.
US 20020103913	Tawil et al.
US 20020104008	Cochran et al.
US 20030055972	Fuller et al.
US 20030115447	Pham et al.
US 20040064729	Yellepeddy

Additionally, the following documents were made of record in the present application by the Information Disclosure Statement filed December 9, 2003.

Document No.	Inventor
JP 2002149599	Kamimaki et al.
JP 2002230189	Nishio et al. (US20020107810)
JP 200330053	Ito et al. (US20030014600)

Because all of the above-listed documents are already of record in the present application, in accordance with MPEP § 708.02(VIII)(D), additional copies of these documents have not been submitted with this Petition.

(E) DETAILED DISCUSSION OF THE REFERENCES

Those of the above-listed documents deemed to be most closely-related to the subject matter encompassed by the claims are discussed in section 2 below, pointing out, with the particularity required by 37 CFR 1.111 (b) and (c), how the claimed subject matter is patentable over the teachings of these documents.

1. Discussion of the Invention

The present invention relates to a disk array system including a plurality of configuration-changeable ranges, relations, or the like, assigned to each information processing unit, or the like, as exemplified in the present substitute specification, e.g., at page 10, line 7, through page 12, line 8, and page 21, line 17, through page 23, line 4, and FIGS. 1-2 and 6-8.

Thus, as set forth in independent claims 10 and 22, a plurality of resource groups are provided, each including a port, a part or all of a first controller, a part or all of a memory, a part or all of a second controller, a disk drive group, and a logical unit; and a first resource in a first resource group of said resource groups, said first resource being changed from a first state of relating to a second resource in said first resource group into a second state of relating to a third resource in said first resource group for changing configuration in said first resource group. Similarly, as recited in independent claims 19 and 23, a plurality of resource groups are provided, each including logical and physical resources, and a first resource in a first resource group is changed from a first state of relating to a second resource in the first resource group into a second state of relating to a third resource in the first resource group for changing the configuration in the first resource group. For example, a physical resource, such as a disk drive group, controller, memory, etc., might be changed from a first state of relating to one logical unit in the resource group to a second state of relating to another logical unit in the resource group.

Further, claims 20 and 21 set forth a disk array system including a plurality of resource groups, each having a plurality of resources, and each of the resource groups, independently of each other, can change a relationship between a plurality of resources in each of the resource groups.

Also, claims 24 and 25 set forth a disk array system having a plurality of resource groups, each being mutually partitioned by a logical partition, and each having a plurality of ports, a part of logical parts corresponding to a controller, a part

of logical parts corresponding to a memory, and disk drives, wherein a first information processing device related to a first resource group cannot access resources in a second resource group. As detailed below, none of the art currently of record teaches or fairly suggests these features of the present invention.

2. Discussion of the References Believed to be Most Closely Related

The patent to Barber, US 6502193, discloses a security system for controlling network access to data in a database. The system also includes a terminal (110) for displaying data, a restricted access database (155), a local server (220), with a local data store, such as a look up table, a first application (100) and a second application (105) (see, e.g., FIG. 1). The security system insulates the user's environment from the environment of applications being accessed so that connection information is not available to the user in a form that would permit the circumvention of access privileges. However, unlike the present invention, Barber does not disclose a disk array system with a plurality of resource groups, such that a first resource in a first resource group is changed from a first state of relating to a second resource in the first resource group into a second state of relating to a third resource in the first resource group for changing configuration in the first resource group, as set forth in claims 10, 19, 22, and 23. Further, Barber does not teach a disk array system including a plurality of resource groups, each having a plurality of resources, and in which each of the resource groups, independently of each other, can change a relationship between a plurality of resources in each of the resource groups, as set

forth in claims 20 and 21. Also, Barber does not show or suggest a disk array system having a plurality of resource groups, each being mutually partitioned by a logical partition, and each having a plurality of ports, a part of logical parts corresponding to a controller, a part of logical parts corresponding to a memory, and disk drives, wherein a first information processing device related to a first resource group cannot access resources in a second resource group, as set forth in claims 24 and 25.

The published US patent application to Oe et al., US 2002/0099837, discloses a computer resource control method and apparatus which manages the access and viewing to computer resources such as a file, storage device, or a storage medium. The apparatus restricts operations on and access to resources, such as data, from a user who has no access right. (See, e.g., paragraphs 5, 7, and 9.) However, unlike the present invention, Oe et al. do not show or suggest a disk array system having a plurality of resource groups, each being mutually partitioned by a logical partition, and each having a plurality of ports, a part of logical parts corresponding to a controller, a part of logical parts corresponding to a memory, and disk drives, wherein a first information processing device related to a first resource group cannot access resources in a second resource group, as set forth in claims 24 and 25. Nor do Oe et al. disclose a disk array system with a plurality of resource groups, such that a first resource in a first resource group is changed from a first state of relating to a second resource in the first resource group into a second state of relating to a

third resource in the first resource group for changing configuration in the first resource group, as set forth in claims 10, 19, 22, and 23. Further, Oe et al. do not teach a disk array system including a plurality of resource groups, each having a plurality of resources, and in which each of the resource groups, independently of each other, can change a relationship between a plurality of resources in each of the resource groups, as set forth in claims 20 and 21.

The patent to Lambright et al., US 6728836, discloses storing data in a cache memory that may also include apportioning the cache memory into slots and mapping each of the slots to at least one of the first and second segments of the cache memory. The storage device includes a plurality of disk drives, a plurality of disk interface units, each being coupled to one of the disk drives, a bus that interconnects the disk interface units and a cache memory, coupled to the bus, the cache memory having a first segment that is accessed on behalf of a first group of external host systems coupled to the storage device and a second segment that is accessed on behalf of a second group of external host systems coupled to the storage device, where at least a portion of the second segment of the cache memory is not part of the first segment of the cache memory. (See, e.g., column 2, line 32, through column 3, line 51, and column 8, line 3, through column 9, line 17.) Thus, while Lambright et al. limit host access to cache memory, there is no teaching of creating resource groups that include logical partitions of the other resources of a disk array system, or configuration changeable ranges allocated to each information

processing unit. Further, Lambright et al. provide no teaching of changing the relations among resources in a resource group. Thus, Lambright et al. do not show or suggest a disk array system having a plurality of resource groups, each being mutually partitioned by a logical partition, and each having a plurality of ports, a part of logical parts corresponding to a controller, a part of logical parts corresponding to a memory, and disk drives, wherein a first information processing device related to a first resource group cannot access resources in a second resource group, as set forth in claims 24 and 25. Nor do Lambright et al. disclose a disk array system with a plurality of resource groups, such that a first resource in a first resource group is changed from a first state of relating to a second resource in the first resource group into a second state of relating to a third resource in the first resource group for changing configuration in the first resource group, as set forth in claims 10, 19, 22, and 23. Also, Lambright et al. do not teach a disk array system including a plurality of resource groups, each having a plurality of resources, and in which each of the resource groups, independently of each other, can change a relationship between a plurality of resources in each of the resource groups, as set forth in claims 20 and 21.

The published US patent application to Ishizaki, US 20030055933, shows a means for selectably interconnecting between at least one logical partition of at least one server and at least one volume in a storage unit, so that information received from one or more sources is directed to a particular one of a plurality of virtual

routers. (See, e.g., Abstract, FIGS. 1, 7-8, 14, 15, 17, and 18, and paragraphs 7-15, 49, 50, 63-65 and 82.) However, Ishizaki does not disclose logically partitioning resources of a disk array system. Rather, for example, only a volume of Ishizaki is logically partitioned. Thus, Ishizaki does not show or suggest a disk array system having a plurality of resource groups, each being mutually partitioned by a logical partition, and each having a plurality of ports, a part of logical parts corresponding to a controller, a part of logical parts corresponding to a memory, and disk drives, wherein a first information processing device related to a first resource group cannot access resources in a second resource group, as set forth in claims 24 and 25. Further, Ishizaki does not disclose a disk array system with a plurality of resource groups, such that a first resource in a first resource group is changed from a first state of relating to a second resource in the first resource group into a second state of relating to a third resource in the first resource group for changing configuration in the first resource group, as set forth in claims 10, 19, 22, and 23. Nor does Ishizaki teach a disk array system including a plurality of resource groups, each having a plurality of resources, and in which each of the resource groups, independently of each other, can change a relationship between a plurality of resources in each of the resource groups, as set forth in claims 20 and 21.

The published US patent application to Rawson, US 20040111596, shows a logically-partitioned data processing system. A hypervisor creates partitions and allocate physical resources to the partitions. The physical resources may include

disks provided through a storage area network (SAN), and the SAN may be partitioned in the same manner as the main data processing system. (See, e.g., Abstract and paragraphs 10 and 35.) Thus, Rawson provides for logical partitioning of a processing system and a storage area, but does not provide for partitioning of other resources in a disk array system other than the physical disks. Under Rawson, the hypervisor sends partition information to the SAN, and the SAN creates a corresponding "shadow" SAN partition. Accordingly, Rawson does not show or suggest a disk array system having a plurality of resource groups, each being mutually partitioned by a logical partition, and each having a plurality of ports, a part of logical parts corresponding to a controller, a part of logical parts corresponding to a memory, and disk drives, wherein a first information processing device related to a first resource group cannot access resources in a second resource group, as set forth in claims 24 and 25. Further, Rawson does not disclose a disk array system with a plurality of resource groups, such that a first resource in a first resource group is changed from a first state of relating to a second resource in the first resource group into a second state of relating to a third resource in the first resource group for changing configuration in the first resource group, as set forth in claims 10, 19, 22, and 23. In addition, Rawson does not teach a disk array system including a plurality of resource groups, each having a plurality of resources, and in which each of the resource groups, independently of each other, can change a relationship between a plurality of resources in each of the resource groups, as set forth in claims 20 and 21.

The Japanese document to Takahashi et al., JP 5128002, shows a cache memory that is divided into plural areas. A magnetic disk device out of a plurality of magnetic disk devices is allocated to be used in each of the plural areas (Abstract). However, Takahashi et al. do not disclose configuration changeable ranges that are assigned to each information processing unit, or the changing of relations of resources within a resource group. Thus, Takahashi et al. do not disclose a disk array system with a plurality of resource groups, such that a first resource in a first resource group is changed from a first state of relating to a second resource in the first resource group into a second state of relating to a third resource in the first resource group for changing configuration in the first resource group, as set forth in claims 10, 19, 22, and 23. Nor do Takahashi et al. teach a disk array system including a plurality of resource groups, each having a plurality of resources, and in which each of the resource groups, independently of each other, can change a relationship between a plurality of resources in each of the resource groups, as set forth in claims 20 and 21. Further, Takahashi et al. provide no teaching of a disk array system having a plurality of resource groups, each being mutually partitioned by a logical partition, and each having a plurality of ports, a part of logical parts corresponding to a controller, a part of logical parts corresponding to a memory, and disk drives, wherein a first information processing device related to a first resource group cannot access resources in a second resource group, as set forth in claims 24 and 25.

The published US patent application to Harris, US 20010047482, shows a method and system for managing storage resources associated with a network having at least one storage resource managed by servers. Volume information associated with a storage resource is communicated to a client based upon authentication information, and a list of permitted volumes for each client is maintained in a volume-configuration layer. If a request is made for additional storage space, new volume information corresponding to new storage space is communicated to the client. Also, in a failure condition, a new storage space is allocated, wherein the new storage space includes a new virtual disk associated with a new physical storage resource. (See, e.g., paragraphs 8-12, and 32-36.) While Harris specifies logical volumes assigned to a particular client, Harris does not create separate resource groups comprising physical and logical resources, wherein a first resource in a first resource group of the resource groups is changed from a first state of relating to a second resource in the first resource group into a second state of relating to a third resource in the first resource group for changing the configuration in the first resource group. Rather, for changing a configuration, Harris makes new physical resources and logical resources available to the client. Thus, Harris does not disclose a disk array system with a plurality of resource groups, such that a first resource in a first resource group is changed from a first state of relating to a second resource in the first resource group into a second state of relating to a third resource in the first resource group for changing configuration in the first resource group, as

set forth in claims 10, 19, 22, and 23. Further, Harris does not teach a disk array system including a plurality of resource groups, each having a plurality of resources, and in which each of the resource groups, independently of each other, can change a relationship between a plurality of resources in each of the resource groups, as set forth in claims 20 and 21. Nor does Harris show or suggest a disk array system having a plurality of resource groups, each being mutually partitioned by a logical partition, and each having a plurality of ports, a part of logical parts corresponding to a controller, a part of logical parts corresponding to a memory, and disk drives, wherein a first information processing device related to a first resource group cannot access resources in a second resource group, as set forth in claims 24 and 25.

The patent to Blumenau et al., US 6502162, provides for configuring vectors of logical storage units for data storage partitioning and sharing. The method may include subdividing data storage into addressable logical storage units, and assigning each host processor a respective subset of the data storage to which access of the host processor is restricted. A program may be executable by a storage controller to access addressable logical storage units and restrict access of host processors (see, e.g., column 2, lines 51-54 and column 3, lines 2-5). However, Blumenau restricts access of host processors by assigning to each host processor a respective subset of the data storage to which access is restricted. This in not the same as the present invention set forth in claims 24 and 25 in which resource groups are created as being mutually partitioned by logical partitions, and a part of the

logical parts corresponds to a controller and a part of the logical parts corresponds to a memory, such that each of the resource groups can be related to an information processing device, wherein a first information processing device related to a first resource group cannot access resources in a second resource group, as set forth in claims 24 and 25. For example, in Blumenau there is no logical partitioning of the controller or memory. Accordingly Blumenau does not teach a disk array system having a plurality of mutually partitioned resource groups including the other limitations set forth in claims 24 and 25. Further, Blumenau not disclose a disk array system with a plurality of resource groups, such that a first resource in a first resource group is changed from a first state of relating to a second resource in the first resource group into a second state of relating to a third resource in the first resource group for changing configuration in the first resource group, as set forth in claims 10, 19, 22, and 23. Similarly, Blumenau does not teach a disk array system including a plurality of resource groups, each having a plurality of resources, and in which each of the resource groups, independently of each other, can change a relationship between a plurality of resources in each of the resource groups, as set forth in claims 20 and 21.

The patent to Camble et al., US 6715031, provides for a system and method for partitioning a storage area network (SAN) associated data library. Discussed is a SAN-associated data library partitioning system, comprised of a plurality of storage element slots adapted to store data storage media. At least one set of the slots may

be assigned to one partition of a plurality of partitions. The library management firmware provides up-to-date security configuration information for each of the FC-to-SCSI bridges (see, e.g., column 2, lines 40-44 and 46-48). However, Camble does not include resource groups as provided for in the claims of the present invention. Thus, Camble does not disclose a disk array system with a plurality of resource groups, such that a first resource in a first resource group is changed from a first state of relating to a second resource in the first resource group into a second state of relating to a third resource in the first resource group for changing configuration in the first resource group, as set forth in claims 10, 19, 22, and 23. Further, Camble does not teach a disk array system including a plurality of resource groups, each having a plurality of resources, and in which each of the resource groups, independently of each other, can change a relationship between a plurality of resources in each of the resource groups, as set forth in claims 20 and 21. Also, Camble has no teaching of a disk array system having a plurality of resource groups, each being mutually partitioned by a logical partition, and each having a plurality of ports, a part of logical parts corresponding to a controller, a part of logical parts corresponding to a memory, and disk drives, wherein a first information processing device related to a first resource group cannot access resources in a second resource group, as set forth in claims 24 and 25.

The published patent application to Cochran et al., US 20020104008, shows a mass storage device having a disk array controller and a plurality of logical units

(LUNs). A control-device LUN (CDLUN) is discussed at paragraph 10; however, this merely describes nothing but a plurality of LUNs for backup, mirroring, or the like. (See also, e.g., paragraphs 16-18 and 28-35.) Thus, Cochran et al. do not disclose a disk array system with a plurality of resource groups, such that a first resource in a first resource group is changed from a first state of relating to a second resource in the first resource group into a second state of relating to a third resource in the first resource group for changing configuration in the first resource group, as set forth in claims 10, 19, 22, and 23. Nor do Cochran et al. teach a disk array system including a plurality of resource groups, each having a plurality of resources, and in which each of the resource groups, independently of each other, can change a relationship between a plurality of resources in each of the resource groups, as set forth in claims 20 and 21. Further Cochran et al. do not show or suggest a disk array system having a plurality of resource groups, each being mutually partitioned by a logical partition, and each having a plurality of ports, a part of logical parts corresponding to a controller, a part of logical parts corresponding to a memory, and disk drives, wherein a first information processing device related to a first resource group cannot access resources in a second resource group, as set forth in claims 24 and 25.

The published patent application to Fuller et al., US 20030055972, shows a shared storage virtualization in which each customer has access only to the logical storage areas associated with the customer, and the customer cannot access the logical storage areas of any other customer. Upon receiving a request to increase

storage, a software module determines unallocated storage areas or LUNs in the storage architecture, and displays information related to the storage areas to the customer. The storage areas may then be assigned to the customer. (See, e.g., paragraphs 12, 28-33, and 61-66.) Thus, Fuller does not change an allocation or configuration within a resource group, but instead adds new resources to the customer. Accordingly, Fuller does not disclose a disk array system with a plurality of resource groups such that a first resource in a first resource group is changed from a first state of relating to a second resource in the first resource group into a second state of relating to a third resource in the first resource group for changing configuration in the first resource group, as set forth in claims 10, 19, 22, and 23. Further, Fuller does not teach a disk array system including a plurality of resource groups, each having a plurality of resources, and in which each of the resource groups, independently of each other, can change a relationship between a plurality of resources in each of the resource groups, as set forth in claims 20 and 21. Also, Fuller does not show or suggest a disk array system having a plurality of mutually partitioned resource groups, such that each of the resource groups can be related to an information processing device, and wherein a first information processing device related to a first resource group cannot access resources in a second resource group, as set forth in claims 24 and 25.

3. Remaining References

The remaining references of record in the application are deemed to not be most-closely related to the present invention, and/or were provided as background information, and also do not show or suggest the present invention.

CONCLUSION

Thus, from the foregoing, it is apparent that none of the above-listed documents teach a storage device having a plurality of resource groups, such that a first resource in a first resource group is changed from a first state of relating to a second resource in the first resource group into a second state of relating to a third resource in the first resource group for changing the configuration in the first resource group, as set forth in claims 10, 19, 22, and 23. Also, not taught is a storage system in which each of the resource groups, independently of each other, can change a relationship between a second plurality of resources in each of the resource groups, as set forth in claims 20, and 21. Nor do the documents show or suggest a disk array system having a plurality of resource groups, each being mutually partitioned by a logical partition, and each having a plurality of ports, a part of logical parts corresponding to a controller, a part of logical parts corresponding to a memory, and disk drives, wherein a first information processing device related to a first resource group cannot access resources in a second resource group, as set

forth in claims 24 and 25. Accordingly, claims 10 and 19-25 are patentable over the above-listed documents.

The Applicants submit that the foregoing discussion demonstrates the patentability of the independent claims over the closest-known prior art, taken either singly, or in combination. The remaining claims depend from the independent claims, claim additional features of the invention, and are patentable at least because they depend from allowable base claims. Accordingly, the requirements of 37 CFR §1.102(d) having been satisfied, the Applicants request that this Petition to Make Special be granted and that the application be examined according to prescribed procedures set forth in MPEP §708.02 (VIII).

The Applicants prepared this Petition in order to satisfy the requirements of 37 C.F.R. §1.102(d) and MPEP §708.02 (VIII). The pre-examination search required by these sections was "directed to the invention as claimed in the application for which special status is requested." MPEP §708.02 (VIII). The search performed in support of this Petition is believed to be in full compliance with the requirements of MPEP §708.02 (VIII); however, Applicants make no representation that the search covered every conceivable search area that might contain relevant prior art. It is always possible that prior art of greater relevance to the claims may exist. The Applicants urge the Examiner to conduct his or her own complete search of the prior art, and to thoroughly examine this application in view of the prior art cited above and any other prior art that may be located by the Examiner's independent search.

Further, while the Applicants have identified and discussed certain portions of each cited reference in order to satisfy the requirement for a "detailed discussion of the references, which discussion points out, with the particularly required by 37 C.F.R. §1.111(b) and (c), how the claimed subject matter is patentable over the references" (MPEP §708.02(VIII)), the Examiner should not limit review of these documents to the identified portions, but rather is urged to review and consider the entirety of each reference.

Respectfully submitted,

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